

9/6/2016 "Life is a journey, not a destination." -Steven Tyler

HW: "Variables, Terms, and Expressions" Page 2: #11, 12, 13b
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AIM: More Review of Algebra Essentials?

Warm Up:

Circle the variables in the following expressions.

1. $3x - 2$

2. $2z^2 + 4z + 4$

3. $2\cos\beta - 5$

4. $6y$

Z

Practice Problems: Simplify each of the following expressions by combining like terms. Be careful to only combine terms that have the same variables and powers.

9. $(2x^2 + 8x) - 1 + (5x^2 - 2x) - 8$

$$7x^2 + 6x - 9$$

10. $-5x^2 - 2x + 10 - x^2 + 7x + 5$

$$\begin{aligned} &-6x^2 + 5x + 15 \\ &5x - 6x^2 + 15 \end{aligned} \quad \text{either}$$

13. Given the algebraic expression $\frac{12x + 12}{x^2 - 1}$ do the following:

a) Evaluate the expression for when $x = 7$.

$$\frac{12(7) + 12}{(7)^2 - 1} = \frac{96}{48} = 2$$

14. Which of the following is equivalent to the expression $2(x - 6) + 4(2x + 1) + 3$? (You must show work for any credit to be given.)

(a) $8(x - 2)$

(b) $5(2x - 1)$

(c) $4(2x + 3)$

(d) $10(x - 1)$

$$\begin{aligned} &2(x - 6) + 4(2x + 1) + 3 \\ &2x - 12 + 8x + 4 + 3 \end{aligned}$$

$$\begin{aligned} &10x - 5 \\ &5(2x - 1) \quad \leftarrow \text{Factored form} \end{aligned}$$

$$\begin{array}{r} 3a) \quad 3x + 5 = 26 \\ \underline{-5} \quad \underline{-5} \\ 3x = 21 \\ \underline{\div 3} \quad \underline{\div 3} \\ x = 7 \end{array}$$

Interval Notation:

Ex: $x \leq 2$
Setbuilder
Notation

$(-\infty, 2]$
interval
Notation

⊗ ∞ and $-\infty$
always have
(Parenthesis)

[included]
(Not included)

Practice Problems: Solve each of the following linear equations. Reduce any non-integer answers to fractions in simplest form.

$$\begin{array}{r}
 (1) \quad 7x + 5 = 2x - 35 \\
 \underline{-2x \quad -2x} \\
 5x + 5 = -35 \\
 \underline{-5 \quad -5} \\
 5x = -40 \\
 \boxed{x = -8}
 \end{array}$$

$$(4) \quad \frac{5(x-3)}{2} - 1 = 14$$

$$\begin{array}{r}
 \frac{5x-15}{2} - 1 = 14 \\
 \underline{+1 \quad +1} \\
 \frac{5x-15}{2} = 15 \quad (2) \\
 5x-15 = 30 \\
 \underline{+15 \quad +15} \\
 5x = 45 \\
 \boxed{x = 9}
 \end{array}$$

$$\begin{array}{r}
 \text{Alt:} \\
 \frac{5(x-3)}{2} - 1 = 14 \\
 \frac{5(x-3)}{2} = 15 \quad (2) \\
 \frac{5(x-3)}{5} = \frac{30}{5} \\
 x-3 = 6 \\
 \underline{+3 \quad +3} \\
 \boxed{x = 9}
 \end{array}$$

Solve the following linear inequalities. Write solutions in interval notation:

$$\begin{array}{r}
 (6) \quad 4x + 3 \geq 2x - 9 \\
 \underline{-2x \quad -2x} \\
 2x + 3 \geq -9 \\
 \underline{-3 \quad -3} \\
 2x \geq -12 \\
 \underline{\frac{2x}{2} \geq \frac{-12}{2}} \\
 x \geq -6
 \end{array}$$

$$[-6, \infty)$$

Answer the following problem:

(9) When finding the intersection of two lines algebraically, you first set the two equations equal to each other. Find the intersection point of the lines $y = 5x + 1$ and $y = 2x + 4$. (First set the equations equal and solve the corresponding equation to find the x-coordinate of the intersection, then plug your answer back in to either of the original equations to find the corresponding y-coordinate.)